CLAIMS

Please cancel claims 1-38 without prejudice or disclaimer, and please add new claims as shown in the following claim listing.

1-38.   (Canceled).

39.   (New) An apparatus comprising:

a cache to hold a first cache line; and

a correlation prefetcher to prefetch to the cache a second cache line correlated with the first cache line.

40.   (New) The apparatus of claim 39, wherein the correlation prefetcher is to prefetch the second cache line from another cache.

41.   (New) The apparatus of claim 39, wherein the correlation prefetcher is to identify the second cache line as being correlated with the first cache line based on how frequent the second cache line is loaded subsequent to the first cache line.

42.   (New) The apparatus of claim 39, wherein the correlation prefetcher is to identify the second cache line as being correlated with the first cache line based on an age of the second cache line relative to that of the first cache line.

43.   (New) The apparatus of claim 39, wherein the correlation prefetcher is to prefetch the second cache line from a set associative cache having the first and second cache lines in a same set.

44.   (New) The apparatus of claim 39, wherein the correlation prefetcher is to identify the second cache line based on a link associated with the first cache line.

45.   (New) The apparatus of claim 44, wherein the cache is to hold the link in association with the first cache line.

46.   (New) The apparatus of claim 39, wherein the correlation prefetcher is to identify a correlated cache line for multiple cache lines.

47.   (New) The apparatus of claim 46, wherein the correlation prefetcher is to generate a link identifying a correlated cache line for multiple cache lines.

48.   (New) The apparatus of claim 46, wherein the correlation prefetcher is to identify from one set of a set associative cache a correlated cache line for multiple cache lines in the one set.

49.   (New) The apparatus of claim 46, wherein the correlation prefetcher is to identify a correlated cache line for multiple cache lines based on relative ages of cache lines.

50.   (New) The apparatus of claim 39, wherein the correlation prefetcher is to prefetch the second cache line to replace the first cache line.

51.   (New) The apparatus of claim 39, comprising a predictor to identify whether the first cache line is to be replaced.

52.   (New) The apparatus of claim 51, wherein the predictor is to identify whether the first cache line is to be replaced based on instructions that used the first cache line during a current residency in the cache.

53.   (New) The apparatus of claim 51, wherein the predictor is to identify whether the first cache line is to be replaced based on an age of the first cache line relative to an age value.

54.   (New) The apparatus of claim 51, wherein the predictor is to identify whether the first cache line is to be replaced based on an age of the first cache line relative to that of other cache lines in the cache and relative to an age value.

55.   (New) The apparatus of claim 51, wherein the predictor is to identify whether the first cache line is to be replaced based on whether the first cache line is likely to be used at an age beyond an age value.

56.   (New) The apparatus of claim 39, wherein the cache is to hold a third cache line and wherein the correlation prefetcher is to prefetch a fourth cache line based on how recent the fourth cache line has been used if the correlation prefetcher is to not prefetch a cache line correlated with the third cache line.

57.   (New) The apparatus of claim 39, wherein the cache is to hold a third cache line and wherein the correlation prefetcher is to prefetch a fourth cache line based on how frequent the fourth cache line has been used if the correlation prefetcher is to not prefetch a cache line correlated with the third cache line.

58.   (New) A method comprising:
          holding a first cache line in a cache;
          identifying a second cache line correlated with the first cache line; and
          prefetching the second cache line to the cache.

59.   (New) The method of claim 58, comprising identifying the second cache line as being correlated with the first cache line based on how frequent the second cache line is loaded subsequent to the first cache line.

60.   (New) The method of claim 58, comprising identifying the second cache line as being correlated with the first cache line based on an age of the second cache line relative to that of the first cache line.

61.   (New) The method of claim 58, wherein the identifying includes identifying the second cache line from a set associative cache having the first and second cache lines in a same set.

62.   (New) The method of claim 58, wherein the prefetching includes prefetching the second cache line to replace the first cache line.

63.   (New) The method of claim 58, comprising identifying whether the first cache line is to be replaced based on instructions that used the first cache line during a current residency in the cache.

64.   (New) The method of claim 58, comprising identifying whether the first cache line is to be replaced based on an age of the first cache line relative to an age value.

65.   (New) The method of claim 58, comprising identifying whether the first cache line is to be replaced based on an age of the first cache line relative to that of other cache lines in the cache and relative to an age value.

66.   (New) The method of claim 58, comprising identifying whether the first cache line is to be replaced based on whether the first cache line is likely to be used at an age beyond an age value.

67.   (New) The method of claim 58, comprising:
        holding a third cache line in the cache; and

prefetching a fourth cache line based on how recent the fourth cache line has been used if a cache line correlated with the third cache line is not to be prefetched.

68.   (New) The method of claim 58, comprising:

holding a third cache line in the cache; and

prefetching a fourth cache line based on how frequent the fourth cache line has been used if a cache line correlated with the third cache line is not to be prefetched.

69.   (New) An apparatus comprising:

a cache for holding a first cache line; and

means for prefetching to the cache a second cache line correlated with the first cache line.

70.   (New) The apparatus of claim 69, comprising means for identifying the second cache line as being correlated with the first cache line.

71.   (New) The apparatus of claim 69, comprising means for identifying whether the first cache line is to be replaced.

72.   (New) The apparatus of claim 69, wherein the cache is for holding a third cache line and wherein the apparatus comprises means for prefetching a fourth cache line if a cache line correlated with the third cache line is not to be prefetched.

73.   (New) A system comprising:

a processor including a cache to hold a first cache line and including a correlation prefetcher to prefetch to the cache a second cache line correlated with the first cache line; and

an audio input/output device.

74.   (New) The system of claim 73, wherein the correlation prefetcher is to identify the second cache line as being correlated with the first cache line based on how frequent the second cache line is loaded subsequent to the first cache line.

75.   (New) The system of claim 73, wherein the correlation prefetcher is to identify the second cache line as being correlated with the first cache line based on an age of the second cache line relative to that of the first cache line.

76.   (New) The system of claim 73, wherein the processor includes a predictor to identify whether the first cache line is to be replaced.